

Remarks/Arguments:

Claim 30 has been amended. No new matter is introduced herein. Of pending claims 1-30, claims 1-11 and 21-29 have been withdrawn.

Claim 30 has been amended to recite that the graphical user interface (GUI) displays multiple waveforms during a recording process for multiple recording locations and that the multiple waveforms are displayed in a manner such that they can be visually compared. No new matter is introduced herein. Support for the amendment can be found, for example, at paragraphs [0029-0032]; and Fig. 3 of the subject specification.

Claim 30 was rejected under 35 U.S.C. § 102(e) as being anticipated by Murphy (U.S. 6,139,505). It is respectfully submitted that this ground for rejection is overcome for the reasons set forth below.

In particular, Murphy does not disclose or suggest that:

...the GUI displays multiple waveforms during a recording process for the multiple recording locations, the multiple waveforms corresponding to the respective sequence of bodily sound signals and being displayed in a manner such that the multiple waveforms can be visually compared...

as required by claim 30.

Murphy discloses, in Fig. 1, a lung sound recording and analysis system 100 that includes a plurality of microphones 102 placed at various sites around the chest of a patient 104 (Col. 4, lines 34-54). Murphy also discloses that a simpler system may "utilize one microphone 102 positioned sequentially at the nine or more sites for data collection and the data collection process repeated at each site" (Col. 4, lines 59-62). Audio signals are measured, conditioned, digitized and then stored at memory 114 or digital storage device 120 (Col. 6, lines 52-64). As shown in Fig. 4, a system operator, after the data is collected and stored, selects a particular inspiration and expiration for further analysis using a display 400 that includes signal tracings obtained at each microphone 102 (Col. 7, lines 1-29).

Murphy, however, does not disclose or suggest that multiple waveforms are displayed during a recording process for multiple recording locations, where the multiple waveforms are displayed such that they can be visually compared, as required by claim 30. Murphy does not teach that multiple waveforms are displayed during a recording process (i.e. during the data

during the data collection). Murphy only teaches that multiple waveforms are displayed during the analysis (i.e. after the data collection). Murphy does teach that patient identifying information may be displayed on a graphical user interface 128 during data collection (Col. 6, lines 44-50). Murphy, however, is silent with respect to displaying multiple waveforms during a data collection process, where the multiple waveforms can be visually compared.

The subject invention provides advantages neither disclosed or suggested by Murphy. According to claim 30, multiple waveforms from different recording locations may be displayed during the recording process and visually compared to one another. In this manner, a user may determine whether a pattern of heart beats (or patterns of other bodily sounds) for one recording location is properly reflected in another recording location. This information may be used, for example, to re-record a signal for a recording location, as described at paragraph [0030] of the subject specification. The display of multiple waveforms may also be used to determine whether it may be desirable to record further bodily sound signals with another predetermined protocol. For example, a user may view an anomaly in a waveform for a recording location, where the anomaly may be associated with a particular disease. The user may further record bodily sound signals according to a different predetermined protocol, where the different protocol may be used to associate or dissociate the anomaly with the disease. Murphy, in contrast, only displays multiple waveforms after recording, for analysis. Thus, Murphy does not include all of the features or the advantages of claim 30.

Because Murphy does not disclose all of the features of claim 30, claim 30 is not subject to rejection under 35 U.S.C. § 102(e) as being anticipated by Murphy.

Claims 12-17 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bredesen et al. (US 5,213,108) in view of Murphy. This ground for rejection is respectfully traversed for the reasons set forth below.

In particular, neither Bredesen et al., Murphy nor their combination disclose or suggest:

... a graphical user interface (GUI) to guide a user through a predetermined protocol for multiple recording locations...

... the GUI displays multiple waveforms corresponding to heart sound signals for the respective multiple recording locations in a manner such that the multiple waveforms can be visually correlated...

as required by claim 12.

Bredesen et al. disclose, in Fig. 1, a stethoscope for capturing and storing heart sounds at six locations, where a "specific order of auscultation" is followed based on observing sternum diagram 132 (Col. 12, lines 30-57). Sternum diagram 132, shown in Fig. 5, is used to indicate from what point on the body waveform data is to be taken or from what point on the body a saved body sound was previously taken (Col. 12, lines 21-45). The heart sound data is analyzed to detect various heart sounds and to provide a diagnosis of abnormalities (Abstract and Figs. 8A-8H).

As acknowledged by the Examiner, on p. 3 of the Office Action, Bredesen et al. do not disclose or suggest a GUI that displays multiple waveforms corresponding to heart sound signals for respective multiple recording locations in a manner such that the multiple waveforms can be visually correlated, as required by claim 12. Bredesen et al., instead, display only one waveform at a time during data collection and, thus, cannot teach the display of multiple waveforms displayed in a manner that allows visual correlation.

Murphy is described above and does not teach the display of multiple waveforms during a data collection process. Bredesen et al, in contrast, teach the display of a single waveform during a data collection process. In addition, Murphy describes the disadvantages of parent patent 5,010,889 to Bredesen et al. (referred to herein as Bredesen '889). Applicant notes that Bredesen et al. is a continuation-in-part of the parent Bredesen '889 patent and describes the same features discussed by Murphy. In particular, at Col. 2, lines 1-14, Murphy teaches that the Bredesen '889 patent has several disadvantages, including using a single microphone and a small LCD panel. In particular, Murphy teaches that the LCD panel of Bredesen '889 is capable of displaying only "a single waveform in one predefined format and is provided simply to determine whether valid data has been obtained." Murphy, thus, explicitly teaches away from the stethoscope of Bredesen '889. Because Murphy does not teach displaying waveforms during data collection and that displaying a waveform during data collection is "simply to determine" valid data, the skilled person would not combine Murphy and Bredesen '889 patents to produce the subject invention. Instead, the combination of Bredesen '889 and Murphy would change the principle of operation of Murphy. It is well settled that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. MPEP §2143.01. Because Bredesen et al. include the same features

same features as the Bredesen '889 patent, Bredesen et al. and Murphy, thus, would not be combined to produce the subject invention. Accordingly, the rejection of independent claim 12 based on the combination of Bredesen et al. and Murphy is improper.

For the reasons set forth above, the rejection of claim 12 is improper and claim 12 is not subject to rejection under 35 U.S.C. § 103(a) as being unpatentable over Bredesen et al. in view of Murphy. Because claims 13-17 and 19 include all of the features of claim 12 from which they depend, claims 13-17 and 19 are also not subject to rejection under 35 U.S.C. § 103(a) as being unpatentable over Bredesen et al. in view of Murphy.

Claims 18 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bredesen et al. and Murphy and further in view of Nova et al. (US 6,334,070). Claims 18 and 20, however, include all of the features of claim 12 from which they depend and are patentable over Bredesen et al. and Murphy for at least the same reasons as claim 12. In addition, because the rejection based on Bredesen et al. and Murphy is improper, the further combination of Bredesen et al., Murphy and Nova et al. is also improper.

Nova et al. do not supply the deficiencies of Bredesen et al. and Murphy because Nova et al. do not disclose or suggest, a GUI that displays multiple waveforms corresponding to heart sound signals for respective multiple recording locations in a manner such that the multiple waveforms can be visually correlated, as required by claim 12.

Nova et al. disclose, in Figs. 1A and 1B, an automated external defibrillator (AED) 10 that guides a rescuer with minimal training through the application of CPR and defibrillation therapy to a patient. AED 10 guides the user through a series of visual instructions on liquid crystal display 14 and provides additional aural instructions via speaker 18. (Col. 3, lines 38-57 of Nova et al.) Nova et al., however, do not disclose or suggest a GUI that displays multiple waveforms corresponding to heart sound signals for respective multiple recording locations in a manner such that the multiple waveforms can be visually correlated, as required by claim 12. Nova et al. do not display waveforms and, thus, cannot teach that multiple visually correlated waveforms corresponding to heart sound signals are displayed.

For the reasons set forth above, the rejection of claim 12 is improper. Accordingly, claims 18 and 20, which include all of the features of claim 12 from which they depend, are also not subject to rejection under 35 U.S.C. § 103(a) as being unpatentable over Bredesen et al. and

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and Murphy and further in view of Nova et al.

In view of the foregoing amendments and remarks, Applicant requests that the Examiner reconsider and withdraw the rejection of claim 12-20 and 30.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Kenneth N. Nigon', written over a horizontal line.

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